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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,577	09/10/2003	Lawrence T. Drzal	MSU 4.1-588	4666
21036	7590	02/07/2006	EXAMINER	
MCLEOD & MOYNE, P.C. 2190 COMMONS PARKWAY OKEMOS, MI 48864			NILAND, PATRICK DENNIS	
			ART UNIT	PAPER NUMBER
			1714	
DATE MAILED: 02/07/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/659,577

Applicant(s)

DRZAL ET AL.

Examiner

Patrick D. Niland

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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1. The amendment of 11/25/05 has been entered. Claims 1-28 are pending.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat. No. 6024900 Saito et al. in view of US Pat. No. 6200915 Adams et al., US Pre-Grant Publication Number 2002/0114952 Ottinger et al., US Pat. No. 6413601 Blaim et al., and US Pat. No. 5164054 Cha et al. US Pat. No. 6555271 Greinke et al., US Pat. No. 6248462 Bonville, and US Pat. No. 5288429 Von Bonin et al..

This rejection is repeated as stated in paragraphs 5-9 of the office action of 8/24/05. It is not seen that adding energy via microwave or radio frequency emr produces different platelets than those of the prior art. No evidence is seen that the energy input of Saito does not give "platelets consisting essentially of single platelets". The instant claim 1 and its dependent claims do not require a thickness of the platelets. Saito does not describe their graphite as being other than "consisting essentially of single platelets" and since the methods of intercalating and grinding the particles are the same in the instant application and the reference other than the form of the enery applied for intercalation, it is expected that similar or the same products result. No evidence is seen to the contrary. The layered nature of graphite is well established. Saito is silent regarding the thickness of their expanded graphite. However, since the methods of intercalating and grinding the particles are the same in the instant application and the reference other than the form of the enery applied for intercalation, it is expected that similar or the same products result. No

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evidence is seen to the contrary. The argument that the composite of Blain is remote from the instant invention is not seen as both appear to have polymer with graphite dispersed therein. Cha fills in blanks in Blain and both are drawn to related technologies, e.g. the means for applying microwaves to carbon. The differences between Blain and Cha are not such that the prior examiner's rationale is without basis and the prior stated obviousness rationale falls within the requirements of *Graham v. Deere*. In any event, the use of microwave energy as the exfoliating energy source as disclosed by Blain would readily bring to mind other sources of emr which could generate the required energies to exfoliate the graphite. No unexpected results are seen stemming from the instantly claimed invention for the use of microwave nor radiofrequency emr as the energy sources to be applied to the graphite/intercalant rather than the heat of Saito. This rejection is therefore maintained.

This rejection of claim 21 is repeated as stated in paragraph 7 of the office action of 8/24/05. The applicant's arguments relating to "worms" are noted but they do not address the prior stated known conductance of electricity as taught by Ottinger which does not require such "worms".

This rejection of claim 22 is repeated as stated in paragraph 8 of the office action of 8/24/05. The rationale provided in the prior office action rebuts the applicant's statement that the combination of the above prior art, including Bonville does not suggest the instantly claimed invention of claim 22.

This rejection of claims 26-28 is repeated as stated in paragraph 9 of the office action of 8/24/05. The applicant's arguments have been considered but Saito discloses the use of polyamides and Von Bonin shows a means of combining them with expanded graphite. The

limitations not required of Von Bonin and as argued by the applicant are provided by the other references cited above with the proper motivation for combining these references.

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick D. Niland whose telephone number is 571-272-1121. The examiner can normally be reached on Monday to Thursday from 10 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan, can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

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applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Patrick D. Niland  
Primary Examiner  
Art Unit 1714